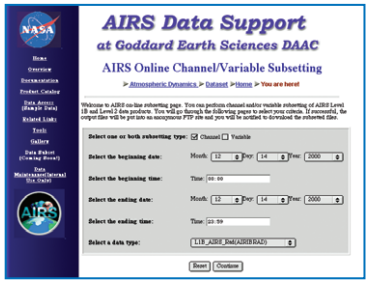
Data Services

AIRS Data Readers

AIRS data readers are available to allow users to read out the various components of an AIRS data file. Data can be sent to an ASCII text file, a set of flat binary files, or printed on the screen.

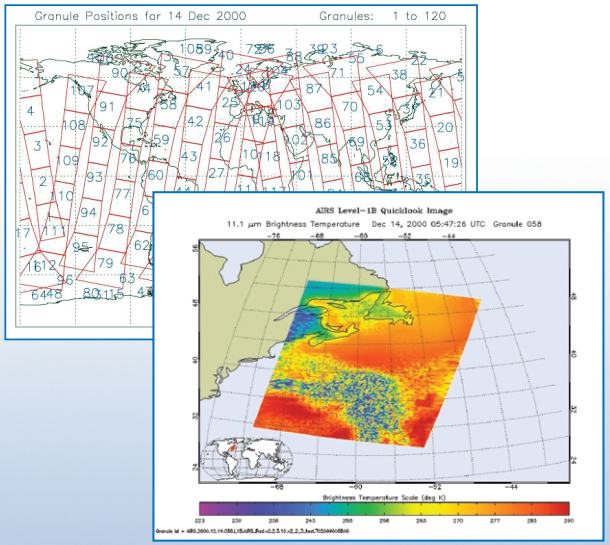
AIRS On-demand Subsetter

The web-based AIRS on-the-fly/on-demand subsetter performs channel/variable subsetting and restructuring for Level 1B and Level 2 data products. One can narrow down criteria to subset data files with desired channels and variables and then download the subsetted file.



AIRS Quicklook

AIRS Quicklook allows users to view AIRS/HSB/AMSU-A Level 1B data online for a specific channel prior to ordering or downloading data. Global map is also provided along with image to show geographic coverage of the granule and flight direction of the spacecraft.



Data Support

The Atmospheric Dynamics Data Support Team at NASA Goddard Earth Sciences Data and Information Service Center/Distributed Active Archive Center (GES DISC DAAC) provides science and data support to assist others in understanding, accessing and using the AIRS data products. Services include assistance with:

- product ordering and distribution
- access of various technical documents
- on-line data visualization and analysis
- on-the-fly and on-demand channel/variable subsetting
- data mining (integrate and run user-provided data reduction algorithms to routinely generate value-added products)
- data format and tools support
- help desk for various user questions and request
- educational resources

Data Access

ECS Data Pool
ftp://g0dps01u.ecs.nasa.gov/

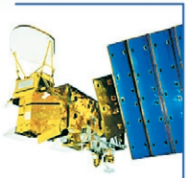
DAAC Search and Order
http://daac.gsfc.nasa.gov/data/

EOS Data Gateway
http://eos.nasa.gov/imswelcome/

NP-2002-XX-XXX-GSFC

Earth Observing System Aqua

AIRS



Atmospheric Infrared Sounder

NASA Goddard Space Flight Center
GES DISC DAAC Code 902
Greenbelt, MD 20771
Toll-Free: (877) 422-1222
FAX: (301) 614-5304

http://daac.gsfc.nasa.gov/atmodyn/airs/
E-mail: atmdyn-dst@daac.gsfc.nasa.gov

AIRS/AMSU-A/HSB

The **Atmospheric Infrared Sounder (AIRS)** is a high-resolution infrared sounder on Earth Observing System polar-orbiting platform, EOS Aqua, which was successfully launched on May 4, 2002. AIRS has 2,378 channels measuring in the infrared range 3.74-15.4 µm and four channels measuring in the visible/ near-infrared range 0.4-1.1µm.

Arrangement of AIRS/AMSU-A/HSB on EOS Aqua (NASA/JPL).

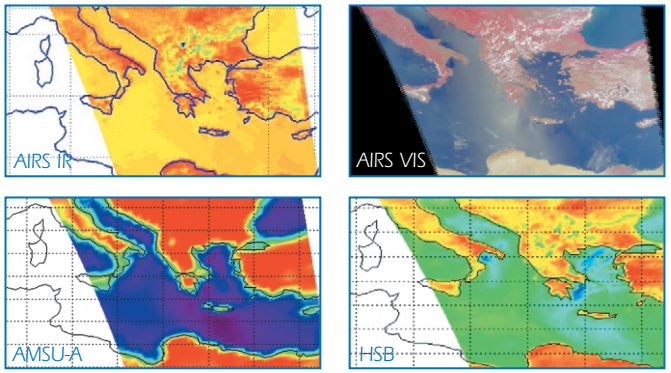
The AIRS is closely coupled with two microwave instruments, the **Advanced Microwave Sounding Unit (AMSU-A)** and the **Humidity Sounder for Brazil (HSB)**. AMSU-A is primarily a temperature sounder providing atmospheric information in the presence of clouds, which can be used to correct the infrared measurements for the effects of the clouds. The primary function of HSB is to provide information on snow/ice cover, precipitation, and the coarse distribution of moisture in the troposphere. Combined with simultaneous measurements from AIRS, the calibrated brightness temperature from AMSU-A and HSB is used to initialize the atmospheric moisture profile required for the retrieval of the final AIRS geophysical products.

AIRS/AMSU-A/HSB obtains atmospheric temperature at an accuracy of 1K for every 1 km layer in the troposphere (1K for every 4 km layer in the stratosphere) and humidity profiles at an accuracy of 10% in 2 km layers from the surface up through the troposphere.

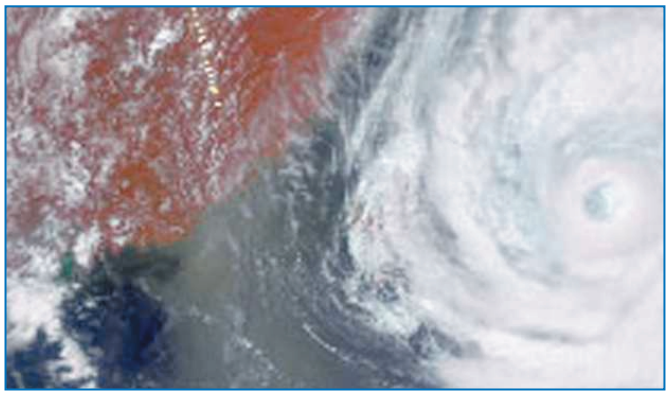
AIRS Data Products

AIRS Level 1B Products

Data Product	Volume (MB/ file)	Horizontal Resolution
AIRS IR Radiance	121.1	15 x 15 km
AIRS Vis/NIR Radiance	16.0	2.3 x 2.3 km
AMSU-A Radiance	0.3	45 x 45 km
HSB Radiance	1.4	15 x 15 km



Four images of the Mediterranean Sea obtained June 14, 2002 (NASA/JPL).


Tropical Cyclone Ramasun near China obtained July 3, 2002 (NASA/JPL).

Global coverage is obtained twice daily (day and night) on a 1:30 p.m. sun-synchronous orbit from a 705-km altitude. For processing convenience, the data along the orbit is divided into 6-minute scenes. Each orbit has approximately 16 scenes.

AIRS Level 2 Products — **Horizontal Resolution**: 45 x 45 km

Standard Retrieval — **Volume = 4.7 MB/file, 28 levels***
- Surface Skin Temperature
- Surface Air Temperature
- Atmospheric Temperature*
- Water Vapor Mass Mixing Ratio*
- Total Precipitable Water Vapor
- Ozone Volume Mixing Ratio*
- Total Ozone Burden
- Spectral IR Surface Emissivities
- Spectral IR Surface Bidirect Reflectivity
- Microwave Surface Brightness
- Microwave Emissivity
- Total Cloud Water
- Cloud Top Temperature
- Cloud Top Pressure
- Effective Cloud Fraction
- Geopotential Height*
- Geopotential Height of Surface

Support Retrieval — **Volume = 17.6 MB/file, 100 levels***
- Surface Skin Temperature
- Surface Air Temperature
- Atmospheric Temperature
- Water Vapor Column Density*
- Cloud Liquid Water*
- Cloud Ice/Water Flag*
- Ice/Snow Concentration
- Ozone Column Density*
- Carbon Monoxide Column Density*
- Methane Column Density*
- Outgoing Longwave Radiation
- Clear-sky Outgoing Longwave Radiation
- Cloud IR Emissivity Ratio
- Cloud IR Reflectivity
- Precipitation
- Rain Rate

Cloud Cleared Radiance — **Volume = 25.8 MB/file**
- Calibrated, Geolocated AIRS IR Radiance